

Abstract:

An electro-hydrostatic actuator unit that contains a sealed pressurized housing filled with a dielectric fluid. A bi-directional motor is immersed in the fluid and drives a gear pump for exchanging fluid via a control circuit between the chambers of a bi-directional hydraulic actuator in response to an input from a controller. The chambers are separated by a piston and a piston rod is connected to an external load such as a plunger type valve. A failsafe circuit is also provided which is arranged to override the control circuit in the event a failsafe condition is detected by the unit controller. The failsafe circuit contains a motor driven pump that provides high pressure fluid from the pressurized reservoir to an accumulator. Valves are arranged to shut down the control circuit and deliver fluid from the accumulator to one of the cylinder chambers to rapidly move the actuator to a desired failsafe position. Both motor drive pumps, the actuator, cylinder, and the controller are fully immersed in the fluid reservoir.